



SEQUENCE LISTING

<110> Aphton Corporation

<120> Chimeric Peptide Immunogens

<130> 1102865-0047

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<151> 2000-05-05

<160> 20

<170> PatentIn version 3.0

<210> 1

<211> 10

<212> PRT

<213> Homo sapiens

<220>

<221> MOD\_RES

<222> (1)..(1)

<223> Pyroglutamic acid or 5-oxoproline

<220>

<221> MOD\_RES

<222> (10)..(10)

<223> Amidated-glycine or glycinamide

<400> 1

Xaa His Trp Ser Tyr Gly Leu Arg Pro Xaa

1 5 10

<210> 2

<211> 16

<212> PRT

<213> Tetanus bacillus

<220>

<221> PEPTIDE

<222> (1)..(16)

<223> Amino acid sequence 829-844 of the Tetanus  
Toxoid Precursor (Tentoxylisin)

<400> 2

Met Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu  
1 5 10 15

<210> 3

<211> 20

<212> PRT

<213> Plasmodium falciparum

<220>

<221> PEPTIDE

<222> (1)..(20)

<223> Amino acid sequence 378-398 of the Plasmodium  
falciparum circumsporozoite (CSP) protein

<400> 3

Asp Glu Lys Lys Ile Ala Lys Met Glu Lys Ala Ser Ser Val Phe Asn  
1 5 10 15

Val Val Asn Ser  
20

<210> 4

<211> 21

<212> PRT

<213> Tetanus bacillus

<220>

<221> PEPTIDE

<222> (1)..(21)

<223> Amino acid sequence 947-967 of Tetanus  
Toxoid Precursor (Tentoxylisin)

<400> 4

Phe Asn Asn Phe Thr Val Ser Phe Trp Leu Arg Val Pro Lys Val Ser  
1 5 10 15

Ala Ser His Leu Glu  
20

<210> 5

<211> 4

<212> PRT

<213> Artificial

<220>

<223> Synthetic peptide

<400> 5

Gly Pro Ser Leu

1

<210> 6

<211> 6

<212> PRT

<213> Artificial

<220>

<223> Synthetic peptide

<400> 6

Ser Ser Gly Pro Ser Leu

1 5

<210> 7

<211> 8

<212> PRT

<213> Artificial

<220>

<223> Synthetic peptide

<400> 7

Ser Ser Gly Pro Ser Leu Lys Leu

1 5

<210> 8

<211> 16

<212> PRT

<213> Measles virus

<220>

<221> PEPTIDE

<222> (1)..(16)

<223> Amino acid sequence 288-302 of the measles virus fusion protein, F

<400> 8

Leu Ser Glu Ile Lys Gly Val Ile Val His Arg Leu Glu Gly Val Glu

1 5 10 15

<210> 9

<211> 31

<212> PRT

<213> Artificial

<220>

<223> Chimeric peptide made up of amino acid sequence 288-302 of the Measels virus fusion protein, F linked by a spacer peptide to amino acid sequence 2-10 of the GnRH hormone

<220>

<221> MOD\_RES

<222> (1)..(1)

<223> Amidated Lysine

<220>

<221> PEPTIDE

<222> (1)..(15)

<223> Peptide corresponds to the amino acid sequences 288-302 of the measles virus fusion protein, F

<220>

<221> PEPTIDE

<222> (19)..(22)

<223> Spacer peptide

<220>

<221> PEPTIDE

<222> (23)..(31)

<223> Peptide corresponds to amino acid sequences 2-10 of the human GnRH hormone

<220>

<221> MOD\_RES

<222> (31)..(31)

<223> Amidated glycine or glycinamide

<400> 9

Lys Leu Leu Ser Glu Ile Lys Gly Val Ile Val His Arg Leu Glu Gly  
1 5 10 15

Val Glu Gly Pro Ser Leu His Trp Ser Tyr Gly Leu Arg Pro Xaa  
20 25 30

<210> 10

<211> 34

<212> PRT

<213> Artificial

<220>  
 <223> Chimeric peptide consisting of amino acid sequence 947-967 of the Tetanus toxoid precursor (Tentoxylysin) linked by a spacer to amino acid sequence 2-10 of the GnRH hormone

<220>  
 <221> MOD\_RES  
 <222> (1)..(1)  
 <223> Amidated phenylalanine

<220>  
 <221> PEPTIDE  
 <222> (1)..(21)  
 <223> Amino acids 947-967 of the Tetanus Toxoid Precursor (Tentoxylysin)

<220>  
 <221> PEPTIDE  
 <222> (22)..(25)  
 <223> Spacer peptide

<220>  
 <221> PEPTIDE  
 <222> (26)..(34)  
 <223> Amino acids 2-10 of the human GnRH hormone

<220>  
 <221> MOD\_RES  
 <222> (34)..(34)  
 <223> Amidated glycine or glycinamide

<400> 10

Phe Asn Asn Phe Thr Val Ser Phe Trp Leu Arg Val Pro Lys Val Ser  
 1 5 10 15

Ala Ser His Leu Glu Gly Pro Ser Leu His Trp Ser Tyr Gly Leu Arg  
 20 25 30

Pro Xaa

<210> 11  
 <211> 28  
 <212> PRT  
 <213> Artificial

<220>  
 <223> Chimeric peptide consisting of amino acid sequence 830-844 of the Tetanus toxoid precursor (Tentoxylisin) linked by a spacer to amino acid sequence 2-10 of the GnRH hormone

<220>  
 <221> MOD\_RES  
 <222> (1)..(1)  
 <223> Amidated-glutamine

<220>  
 <221> MOD\_RES  
 <222> (28)..(28)  
 <223> Amidated-glycine or glycinamide

<220>  
 <221> PEPTIDE  
 <222> (1)..(15)  
 <223> Amino acid sequence 830-844 of the Tetanus Toxoid Precursor (Tentoxylisin)

<220>  
 <221> PEPTIDE  
 <222> (16)..(19)  
 <223> Spacer peptide

<220>  
 <221> PEPTIDE  
 <222> (20)..(28)  
 <223> Amino acid sequence 2-10 of the human GnRH hormone

<400> 11

Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu Gly  
 1 5 10 15

Pro Ser Leu His Trp Ser Tyr Gly Leu Arg Pro Xaa  
 20 25

<210> 12  
 <211> 33  
 <212> PRT  
 <213> Artificial

<220>  
 <223> Chimeric peptide consisting of amino acid sequence 378-398 of the Plasmodium falciparum CSP protein linked by a spacer to amino

acid sequence 2-10 of the GnRH hormone

<220>  
 <221> MOD\_RES  
 <222> (1)..(1)  
 <223> Amidated aspartic acid

<220>  
 <221> MOD\_RES  
 <222> (33)..(33)  
 <223> Amidated glycine or glycinamide

<220>  
 <221> PEPTIDE  
 <222> (1)..(20)  
 <223> Amino acid sequence 378-398 of the Malaria  
 (Plasmodium falciparum) circumsporozoite  
 ( CSP) protein

<220>  
 <221> PEPTIDE  
 <222> (21)..(24)  
 <223> Spacer peptide

<220>  
 <221> PEPTIDE  
 <222> (25)..(33)  
 <223> Amino acid sequence 2-10 of the human GnRH hormone

<400> 12

Asp Glu Lys Lys Ile Ala Lys Met Glu Lys Ala Ser Ser Val Phe Asn  
 1 5 10 15

Val Val Asn Ser Gly Pro Ser Leu His Trp Ser Tyr Gly Leu Arg Pro  
 20 25 30

Xaa

<210> 13  
 <211> 34  
 <212> PRT  
 <213> Artificial

<220>  
 <223> Chimeric peptide consisting of amino acid sequence 1-10 of the

GnRH hormone linked by a spacer to amino acid sequence 288-302 of the Measles virus fusion protein,

<220>  
 <221> PEPTIDE  
 <222> (1)..(10)  
 <223> Amino acid sequence 1-10 of the human GnRH hormone

<220>  
 <221> PEPTIDE  
 <222> (11)..(18)  
 <223> Spacer peptide

<220>  
 <221> PEPTIDE  
 <222> (19)..(34)  
 <223> Amino acid sequence 288-302 of the Measles virus fusion protein, F

<220>  
 <221> MOD\_RES  
 <222> (1)..(1)  
 <223> Pyroglutamic acid or 5-oxoproline

<400> 13

Xaa	His	Trp	Ser	Tyr	Gly	Leu	Arg	Pro	Gly	Ser	Ser	Gly	Pro	Ser	Leu
1				5					10					15	

Lys	Leu	Leu	Ser	Glu	Ile	Lys	Gly	Val	Ile	Val	His	Arg	Leu	Glu	Gly
			20					25					30		

Val Glu

<210> 14  
 <211> 37  
 <212> PRT  
 <213> Artificial

<220>  
 <223> Chimeric peptide consisting of amino acid sequence 1-10 of the GnRH hormone linked by a spacer to amino acid sequence 947-967 of the Tetanus toxoid precursor (Tentoxylisin)

<220>  
 <221> MOD\_RES  
 <222> (1)..(1)



<223> Pyroglutamic acid or 5-oxoproline

<220>

<221> PEPTIDE

<222> (1)..(10)

<223> Amino acid sequence 1-10 of the human GnRH hormone

<220>

<221> PEPTIDE

<222> (11)..(16)

<223> Spacer peptide

<220>

<221> PEPTIDE

<222> (17)..(37)

<223> Amino acid sequence 947-967 of the Tetanus toxoid precursor  
(Tentoxylisin)

<400> 14

Xaa	His	Trp	Ser	Tyr	Gly	Leu	Arg	Pro	Gly	Ser	Ser	Gly	Pro	Ser	Leu
1				5					10					15	

Phe	Asn	Asn	Phe	Thr	Val	Ser	Phe	Trp	Leu	Arg	Val	Pro	Lys	Val	Ser
			20					25					30		

Ala	Ser	His	Leu	Glu
			35	

<210> 15

<211> 31

<212> PRT

<213> Artificial

<220>

<223> Chimeric peptide consisting of amino acid sequence 1-10 of the  
GnRH hormone linked by a spacer to amino sequence 830-844 of the  
Tetanus toxoid precursor (Tentoxylisin)

<220>

<221> MOD\_RES

<222> (1)..(1)

<223> Pyroglutamic acid or 5-oxoproline

<220>

<221> PEPTIDE

<222> (1)..(10)

<223> Amino acid sequence 1-10 of the human GnRH hormone

<220>

<221> PEPTIDE

<222> (11)..(16)

<223> Spacer peptide

<220>

<221> PEPTIDE

<222> (17)..(31)

<223> Amino acid sequence 830-844 of the Tetanus toxoid precursor  
(Tentoxylisin)

<400> 15

Xaa His Trp Ser Tyr Gly Leu Arg Pro Gly Ser Ser Gly Pro Ser Leu  
1 5 10 15

Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu  
20 25 30

<210> 16

<211> 36

<212> PRT

<213> Artificial

<220>

<223> Chimeric peptide consisting of amino acid sequence 1-10 of the  
GnRH hormone linked by a spacer to amino acid sequence 378-398 of  
the Plasmodium falciparum circumsporozoite (CSP) protein

<220>

<221> MOD\_RES

<222> (1)..(1)

<223> Pyroglutamic acid or 5-oxoproline

<220>

<221> PEPTIDE

<222> (1)..(10)

<223> Amino acid sequence 1-10 of the human GnRH hormone

<220>

<221> PEPTIDE

<222> (11)..(16)

<223> Spacer peptide

<220>  
 <221> PEPTIDE  
 <222> (17)..(36)  
 <223> Amino acid sequence 378-398 of the Malaria  
 (Plasmodium falciparum) circumsporozoite  
 (CSP) protein

<400> 16

Xaa His Trp Ser Tyr Gly Leu Arg Pro Gly Ser Ser Gly Pro Ser Leu  
 1 5 10 15

Asp Glu Lys Lys Ile Ala Lys Met Glu Lys Ala Ser Ser Val Phe Asn  
 20 25 30

Val Val Asn Ser  
 35

<210> 17  
 <211> 47  
 <212> PRT  
 <213> Artificial

<220>  
 <223> Chimeric peptide consisting of amino acid sequence 1-10 of the  
 GnRH hormone linked by a spacer to amino acid sequence 288-302 of  
 the Measles virus protein F linked by a spacer to amino acid  
 sequence 2-10 of the GnRH hormone

<220>  
 <221> MOD\_RES  
 <222> (1)..(1)  
 <223> Pyroglutamic acid or 5-oxoproline

<220>  
 <221> MOD\_RES  
 <222> (47)..(47)  
 <223> Amidated-glycine or glycinamide

<220>  
 <221> PEPTIDE  
 <222> (1)..(10)  
 <223> Amino acid sequence 1-10 of the human GnRH hormone

<220>  
 <221> PEPTIDE  
 <222> (11)..(18)  
 <223> Spacer peptide

<220>  
 <221> PEPTIDE  
 <222> (19)..(34)  
 <223> Amino acid sequence 288-302 of the Measles virus fusion protein, F

<220>  
 <221> PEPTIDE  
 <222> (35)..(38)  
 <223> Spacer peptide

<220>  
 <221> PEPTIDE  
 <222> (39)..(47)  
 <223> Amino acid sequence 2-10 of the human GnRH hormone

<400> 17

Xaa	His	Trp	Ser	Tyr	Gly	Leu	Arg	Pro	Gly	Ser	Ser	Gly	Pro	Ser	Leu
1				5					10					15	

Lys	Leu	Leu	Ser	Glu	Ile	Lys	Gly	Val	Ile	Val	His	Arg	Leu	Glu	Gly
			20				25						30		

Val	Glu	Gly	Pro	Ser	Leu	His	Trp	Ser	Tyr	Gly	Leu	Arg	Pro	Xaa
		35					40					45		

<210> 18  
 <211> 50  
 <212> PRT  
 <213> Artificial

<220>  
 <223> Chimeric peptide consisting of amino acid sequence 1-10 of human GnRH linked by a spacer to amino acid sequence 947-967 of the Teanus toxoid precursor (Tentoxylisin) protein linked by a spacer to amino acid sequence 2-10 of human GnRH

<220>  
 <221> MOD\_RES  
 <222> (1)..(1)  
 <223> Pyroglutamic acid or 5-oxoproline

<220>  
 <221> MOD\_RES

<222> (50)..(50)  
 <223> Amidated glycine or glycinamide

<220>  
 <221> PEPTIDE  
 <222> (1)..(10)  
 <223> Amino acid sequence 1-10 of the human GnRH hormone

<220>  
 <221> PEPTIDE  
 <222> (11)..(16)  
 <223> Spacer peptide

<220>  
 <221> PEPTIDE  
 <222> (17)..(37)  
 <223> Amino acid sequence 947-967 of the Tetanus toxoid precursor  
 (Tentoxylisin)

<220>  
 <221> PEPTIDE  
 <222> (38)..(41)  
 <223> Spacer peptide

<220>  
 <221> PEPTIDE  
 <222> (42)..(50)  
 <223> Amino acid sequence 2-10 of the human GnRH hormone

<400> 18

Xaa His Trp Ser Tyr Gly Leu Arg Pro Gly Ser Ser Gly Pro Ser Leu  
 1 5 10 15

Phe Asn Asn Phe Thr Val Ser Phe Trp Leu Arg Val Pro Lys Val Ser  
 20 25 30

Ala Ser His Leu Glu Gly Pro Ser Leu His Trp Ser Tyr Gly Leu Arg  
 35 40 45

Pro Xaa  
 50

<210> 19  
 <211> 46  
 <212> PRT

<213> Artificial

<220>

<223> Chimeric peptide consisting of amino acid sequence 1-10 of human GnRH linked by a spacer to amino acid sequence 830-844 of Tetanus toxoid precursor (Tentoxylisin) linked by a spacer to amino acid sequence 1-10 of GnRH

<220>

<221> MOD\_RES

<222> (1)..(1)

<223> Pyroglutamic acid or 5-oxoproline

<220>

<221> MOD\_RES

<222> (46)..(46)

<223> Amidated glycine or glycineamide

<220>

<221> PEPTIDE

<222> (1)..(10)

<223> Amino acid sequence 1-10 of the human GnRH hormone

<220>

<221> PEPTIDE

<222> (11)..(16)

<223> Spacer peptide

<220>

<221> PEPTIDE

<222> (17)..(31)

<223> Amino acid sequence 830-844 of the Tetanus toxoid precursor (Tentoxylisin)

<220>

<221> PEPTIDE

<222> (32)..(37)

<223> Spacer peptide

<220>

<221> PEPTIDE

<222> (38)..(46)

<223> Amino acid sequence 2-10 of the human GnRH hormone

<400> 19

Xaa His Trp Ser Tyr Gly Leu Arg Pro Gly Ser Ser Gly Pro Ser Leu  
 1 5 10 15

Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu Ser  
 20 25 30

Ser Gly Pro Ser Leu His Trp Ser Tyr Gly Leu Arg Pro Xaa  
 35 40 45

<210> 20  
 <211> 51  
 <212> PRT  
 <213> Artificial

<220>  
 <223> Chimeric peptide consisting of amino acid sequence 1-10 of human GnRH linked by a spacer to amino acid sequence 378-398 of Plasmodium falciparum circumsporozoite (CSP) protein

<220>  
 <221> MOD\_RES  
 <222> (1)..(1)  
 <223> Pyroglutamic acid or 5-oxoproline

<220>  
 <221> MOD\_RES  
 <222> (51)..(51)  
 <223> Amidated glycine or glycinamide

<220>  
 <221> PEPTIDE  
 <222> (1)..(10)  
 <223> Amino acid sequence 1-10 of the human GnRH hormone

<220>  
 <221> PEPTIDE  
 <222> (11)..(16)  
 <223> Spacer peptide

<220>  
 <221> PEPTIDE  
 <222> (17)..(36)  
 <223> Amino acid sequence 378-398 of the Plasmodium falciparum circumsporozoite (CSP) protein

<220>

<221> PEPTIDE  
 <222> (37)..(42)  
 <223> Spacer peptide

<220>  
 <221> PEPTIDE  
 <222> (43)..(51)  
 <223> Amino acid sequence 2-10 of the human GnRH hormone

<400> 20

Xaa His Trp Ser Tyr Gly Leu Arg Pro Gly Ser Ser Gly Pro Ser Leu  
 1 5 10 15

Asp Glu Lys Lys Ile Ala Lys Met Glu Lys Ala Ser Ser Val Phe Asn  
 20 25 30

Val Val Asn Ser Ser Ser Gly Pro Ser Leu His Trp Ser Tyr Gly Leu  
 35 40 45

Arg Pro Xaa  
 50